

**NOAA-NATIONAL MARINE FISHERIES SERVICE (presently NOS)**  
**SOUTHEAST FISHERIES SCIENCE LABORATORY IN CHARLESTON**

**FY93 SIGNIFICANT ACCOMPLISHMENTS**

**MARINE BIOTOXINS PROGRAM**

Marine biotoxins and harmful algae represent a significant and expanding threat to human health and fisheries resources throughout the United States. The Marine Biotoxins Program of the Charleston Laboratory has directed its efforts in FY93 to address marine biotoxin issues at the national and international levels, promoting the implementation of extramurally funded research and through direct implementation of basic and applied research in its newly reorganized intramural research program. Leadership at the national and international level was provided by representing NOAA for the National Plan on Marine Biotoxins and Harmful Algae, the International Oceanic Commission on Harmful Algal Blooms and the Seafood Safety Initiative Meeting. Members of the Program aided the implementation of extramurally funded work by taking a lead role in the evaluation and ranking of SK proposals, service as federal program officers and technical monitors, and the design of solicitations for FY94.

Intramural research within the program has adhered to the directives of the National Plan for basic science research and the Seafood Safety Initiative Meeting for applied research, and has been strengthened by addition of scientists with active research programs in toxic algae, natural products chemistry, pharmacology, and toxicology.

Specific research accomplishments include the following:

1. The bacterial production of saxitoxin has been determined by HPLC analysis with final proof being sought using a newly installed mass spectrometer. This work has been presented at the Gordon Conference on Mycotoxins and Pycotoxins.
2. The MQ2 clone of *Gambierdiscus toxicus*, the most toxic dinoflagellate clone known to man, has been mass cultured and three different classes of maitotoxin have been identified. This work was also presented at the Gordon Conference.
3. Other clones of *G. toxicus* have been isolated determined to produce ciguatoxin. This work was presented at the International Workshop on Ciguatera Management.
4. The pharmacology and toxicology of maitotoxin has been completed and one paper was published in the Journal of Biological Chemistry, a second has been accepted for publication in the Journal and a third is in preparation. A direct result of this research is the implementation of *in vitro* toxicity assays and ion flux assays as standard procedures in this laboratory. The new class of receptor based assays was developed for brevetoxin, ciguatoxin, saxitoxin, and domoic acid. This work has been presented at the Seafood Safety Initiative Meeting and the Gordon Conference and will be submitted to a special issue of the journal Natural Toxins, dedicated to phycotoxins.

The goals of the Marine Biotoxin Program have been accomplished by fostering management of and scientific research on marine algae, isolation, chemical and pharmacological characterization of their specific properties, and development of reliable biotoxin tests in formats necessary for implementation of inspection, monitoring, and basic science research.